

PATENT

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants:	BEHRENBRUCH, <i>et al.</i>	Examiner: Lee, John W.
Serial No.:	10/502,034	Group Art Unit: 2621
Filed:	July 19, 2004	Confirmation No.: 8699
For:	Image Registration	
Customer No.:	23719	Kalow & Springut LLP 488 Madison Avenue, 19th Floor New York, New York 10022

October 30, 2008

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

DECLARATION OF DR. SARAH BOND

Sir:

Dr. Sarah Bond hereby declares:

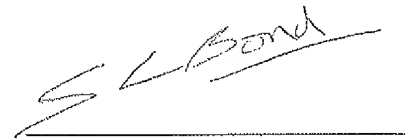
1. I, Dr. Sarah Bond, earned a bachelor of arts degree and a master of engineering degree in Electrical and Information Sciences in 2003 from Cambridge University, and a D.Phil. degree in Engineering Science in 2007 from Oxford University.
2. I have been employed at Siemens Molecular Imaging Ltd., the assignee of record for the above captioned application, since 2007 and my current title is Scientist, and IP Manager. My responsibilities include developing image processing methods for the medical imaging field, in particular for PET and SPECT. My responsibilities also include reviewing and analysing pertinent literature such as patents and published patent applications in this area. I submit that I am a person of at least ordinary skill in the relevant art for the technology described in the above captioned patent application.

3. I am not one of the named inventors on the above captioned patent application.
4. I have reviewed the specification of the U.S. Patent Application Serial No. 10/502,034, the currently pending claims, the Non-final Office Action dated July 2, 2008 and the accompanying reply to the Non-Final Office Action.
5. Based on my experience in the field of medical image processing and for the reasons provided below, I submit that the currently pending claims would not have been obvious to a person of ordinary skill on July 19, 2004, the date of filing the above captioned patent application.
6. The examiner cites the patent application Avinash *et al.* (US 2004/0017935) and asserts that the claims of the present application are not patentable in view of Avinash alone and in combination with other references.
7. I agree with the examiner that Avinash discloses a method to display, register and calculate a measure of dissimilarity of the registered images. However, I respectfully disagree that Avinash would direct a person of ordinary skill to develop the claimed methods, including the defining of a confidence measure in the registration.
8. Avinash describes a method to perform registration of two images, say I1 and I2, see paras [0027]-[0030], and displaying the two images in superposition based on the transformation. Avinash optionally provides a segmentation of the two images in order to aid the registration, I1_{seg} and I2_{seg}.
9. The registration can be rigid, deformable or a combination of the two, $I2R = T_{def} * T_{rigid} * I2$.
10. Avinash discloses a method to calculate the dissimilarity of the registered images. This measure is a function of the images themselves,

$$D = fn(I1, I2R, \{I1_s, I2R_{seg}\}).$$
11. The applicants calculate a different measure, one of confidence. This is not a function of the images, and is independent of information within the images, as it is a function of the transformation, $C = fn(\{T_{rigid}\}, T_{def})$.
12. Avinash does not disclose a measure of confidence in the registration that is based directly on the transformation matrix.

13. Furthermore, the applicants' claims in the present application are not directed to a method of comparison of the two registered images, rather they are assessing the likelihood of a good result by looking at the size of the deformation, and thus developed the non-obvious claimed method.
14. Therefore, I do not believe that Avinash discloses at least the claim feature of "measuring a confidence." Further, it is my understanding that none of the other cited references disclose or suggest this feature.
15. All statements made herein are of my own knowledge and are true, and all statements made on information and beliefs are believed to be true. All statements are made with the knowledge that wilful, false statements of the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "S. Bond", written over a horizontal line.

Sarah Bond, D.Phil.